AMENDMENTS TO THE CLAIMS

1. (Currently amended) An integrated circuit chip including a pump comprising:

a cavity formed in an insulating substrate, an upper portion of the substrate is located in the vicinity of the cavity and ~~forming~~ a border [[of]] is defined at an intersection between the cavity and the upper portion of the substrate;

a conductive layer covering the inside of the cavity at least up to the border;

a flexible membrane, including a conductive material, placed above the cavity and bearing against the border;

a dielectric layer that provides insulation between portions of the conductive layer and of the conductive material of the membrane which are close to each other;

a pumping volume defined between the conductive layer and the flexible membrane;

a first opening that provides fluid communication to the pumping volume through the conductive layer;

a second opening positioned ~~near~~ closer to the border of the cavity than the first opening and that provides fluid communication to the pumping volume; and

terminals to receive and apply a voltage between the conductive layer and the membrane to cause the flexible membrane to move to pump air through the pumping volume.

2. (Currently amended) The integrated circuit chip of claim 1, wherein said cavity has substantially ~~the shape of~~ a cup shape so that the interval between the conductive layer and the membrane progressively increases from the border to ~~the~~ a bottom of the cavity.

3. (Previously presented) The integrated circuit chip of claim 1, wherein the membrane is in an idle state when no voltage is applied between said terminals, the application of a voltage deforming the membrane by drawing it closer to the conductive layer, the suppression of the voltage bringing the membrane back to its idle state.

4. Cancelled

5. (Currently amended) The integrated circuit chip of claim 1, wherein the first opening is positioned substantially at a ~~the~~ bottom of the cavity.

6. (Previously presented) The integrated circuit chip of claim 1, further comprising a ventilating duct formed at least in part in the semiconductor substrate of the integrated circuit and that leads up to the first opening.

7. – 10. Cancelled

11. (Previously presented) The integrated circuit chip of claim 1, further comprising a first ventilating duct formed at least in part in the semiconductor substrate of the integrated circuit and that leads to the first opening and a second ventilating duct formed at least in part in the semiconductor substrate and that leads to the second opening.

12. (Previously presented) The integrated circuit chip of claim 1, wherein the second opening is larger than the first opening.

13. (Previously presented) The integrated circuit chip of claim 1, wherein the dielectric layer is positioned on the conductive layer.

14. (Previously presented) The integrated circuit chip of claim 1, wherein the dielectric layer is positioned on the flexible membrane.

15. (Previously presented) The integrated circuit chip of claim 1, wherein the flexible membrane is formed of a conductive material.

16. (Previously presented) The integrated circuit chip of claim 1, wherein the second opening provides selective fluid communication with the pumping volume.

17. (Previously presented) The integrated circuit chip of claim 16, wherein application of the voltage to the terminals causes the flexible membrane to move toward the conductive layer to close fluid communication between the second opening and the pumping volume.

18. (New) An integrated circuit chip including a pump comprising:

a cavity formed in an insulating substrate;

a conductive layer covering at least a portion of an interior of the cavity;

a flexible membrane, including a conductive material, placed above the cavity;

a dielectric layer that provides insulation between portions of the conductive layer and the conductive material of the membrane which are close to each other;

a pumping volume defined between the conductive layer and the flexible membrane;

a first opening that provides fluid communication to the pumping volume through the conductive layer;

a second opening that provides fluid communication to the pumping volume; and terminals to receive and apply a voltage between the conductive layer and the membrane to cause the flexible membrane to move;

wherein the flexible membrane is configured to cover at least the second opening when the voltage is applied, the second opening being larger than the first opening to promote the introduction of air to the pumping volume through the second opening when the voltage is reduced.

19. (New) The integrated circuit chip of claim 18, wherein said cavity has a cup shape so that an interval between the conductive layer and the membrane progressively increases from a border, formed between the cavity and an upper surface of the substrate, to the bottom of a cavity.

20. (New) The integrated circuit chip of claim 19, wherein the first opening is positioned substantially at the bottom of the cavity.

21. (New) The integrated circuit chip of claim 18, further comprising a first ventilating duct formed at least in part in the semiconductor substrate of the integrated circuit and that leads to the first opening and a second ventilating duct formed at least in part in the semiconductor substrate and that leads to the second opening.

22. (New) The integrated circuit chip of claim 18, wherein the dielectric layer is positioned on the conductive layer.

23. (New) The integrated circuit chip of claim 18, wherein the dielectric layer is positioned on the flexible membrane.

24. (New) The integrated circuit chip of claim 18, wherein the flexible membrane is formed of a conductive material.

25. (New) A method of pumping fluid through a pumping volume in an integrated circuit chip, the method comprising:

providing a cavity formed in an insulating substrate, a conductive layer covering at least portions of an interior of the cavity, a flexible membrane including a conductive material placed above the cavity, a dielectric layer that provides insulation between portions of the conductive layer and of the conductive material of the membrane which are close to each other, wherein a pumping volume is defined between the conductive layer and the flexible membrane;

moving the membrane toward to conductive layer to close a second opening, that otherwise provides fluid communication to the pumping volume, to pump air from the pumping volume and through a first opening that provides fluid communication to the pumping volume through the conductive layer; and

moving the membrane away from the conductive layer to open the second opening to draw air into the pumping volume through the second opening.

26. (New) The method of claim 25, wherein moving the membrane toward the conductive layer includes applying a voltage between the conductive layer and the conductive material.

27. (New) The method of claim 25, wherein moving the membrane away from the conductive layer includes reducing the voltage between the conductive layer and the conductive material.

28. (New) The method of claim 25, wherein the second opening is larger than the first opening.